

Modern Health Talk comments on FCC Actions To Accelerate Adoption and Accessibility of Broadband-Enabled Health Care Solutions and Advanced Technologies (GN Docket No. 16-46)

As a retired IBM technologist, market strategist, futurist, consumer advocate, and founding editor of Modern Health Talk, I am please to respond and will describe my background afterwards.

Objective I: Promote Effective Policy and Regulatory Solutions That Encourage Broadband Adoption and Promote Health IT

1. Regarding ways to promote broadband adoption that is widely available, affordable, and at sufficient bandwidth, the FCC needs to foster competition and encourage public networks as an alternative to private monopoly. Realize that fiber-optic cabling, because of its nearly unlimited capacity, offers incumbent operators a natural monopoly. When faced with the high cost of building overlay networks, it's nearly impossible for competitors to justify the investment unless they can quickly capture enough market share, but the incumbent can too easily throttle-up capacity, services and support. Many states have laws prohibiting broadband competition from public networks, including Texas, which prohibited public fiber in the late 1990s and then later tried, unsuccessfully, to extend that ban to public Wi-Fi. The FCC should champion legislative changes at the state and federal level to allow public alternatives when the free market fails to produce vibrant competition.

(<https://www.slideshare.net/waynecaswell/big-broadband-public-infrastructure-of-private-monopolies> is a 2003 white paper I wrote on the role of public and private networks.)

2. Regarding the types of healthcare applications and data requirements, they vary greatly. Low bandwidth examples include simple texts sent as appointment reminders and remote monitoring of the AliveCor EKG that only needs to occasionally send a few dozen bytes of data. Higher bandwidth is needed for video consultations, especially if they include multiple parties (primary & consulting physician, patient, patient advocate, family caregiver, and nursing staff) and real-time medical imaging, such as a video feed showing an ear infection. Because the smartphone is becoming the medical gateway between local devices and remote services, wireless bandwidth is an issue. So the FCC needs to promote rapid deployment of faster 5G networks to more of the population.

2a. Regarding Net Neutrality (not part of this proposed rule making), I see a legitimate place for bandwidth throttling if it's by class of service rather than to advantage one service provider over another. High-value medical applications such as remote sensor monitoring may have very low bandwidth needs but a life-or-death need for guaranteed delivery. On the other hand, the video streaming of movies needs very high bandwidth but offers relatively little value when you consider the \$2 cost of a movie rental versus not getting that critical medical sensor alert.

3. Regarding IoT and the disappearance of computing & communication technologies into everyday objects, much can be learned about a patient's condition just by monitoring distributed sensors in the home environment, especially when expert systems follow trends from motion sensors and notice important changes in activity and gait, for example. As Moore's Law allows medical devices to continually get smaller, cheaper, more accurate, and easier to use, many of the functions once associated with doctors in clinics and hospitals will move

down-market to consumers at home or on the go. That trend will dramatically lower the cost of providing care, as well as preventing the need for it in the first place. Knowing that Benjamin Franklin was right when he said, “an ounce of prevention is worth a pound of cure,” I see the biggest potential cost savings coming from an increased focus in health, wellness, and prevention. How much savings? At Modern Health Talk, I keep writing about saving at least \$1.5 trillion/year.

4. Regarding Technology issues, I see significant market differences between fiber networks (natural monopolies) and wireless (vibrant competition), so the FCC should focus on market issues. An FCC success story is in the space of unlicensed RF spectrum, which promoted lots of industry innovation and lots of vibrant competition. Even competing industry standards (Wi-Fi, Bluetooth, Zigbee, Z-Wave, etc.) are evolving on their own to address compatibility issues. Other examples of wireless innovation include mesh networks, smart radios, and steerable antennas, each of which improves security and interference immunity.

5a. Regarding bandwidth and future requirements, networks operators rarely invest in additional capacity until it’s needed, creating a chicken-v-egg dilemma. View my 2006 presentation on “BIG Broadband and Gigabit to the home” for examples of high-bandwidth apps that can’t even be created without the fast networks already in place. I developed the slides to promote gigabit networks when other network visionaries were still calling for a national broadband strategy of 100Mbps. Anyone who ever took Queuing Theory in college remembers the “turnpike effect,” where billions are spent on new highway infrastructure, but as soon as the highway opens it is already congested.

(<https://www.slideshare.net/waynecaswell/big-broadband-and-gigabittothome-6726015>)

5e. Regarding retrofit of existing and future health care facilities, this is a moving target as network technology keeps evolving. Conduit can help for wired networks, allowing cat.5 Ethernet cabling to be replaced by cat.6 or fiber. Having access to more unlicensed RF spectrum can help facilities avoid radio interference, which is hard enough on one floor but compounded with floors above and below.

6. Regarding non-technical issues, broadband-enabled healthcare services are easier to justify with a larger percentage of the population having access AND actually subscribing. That means it must be affordable, with enough perceived value, and sometimes with training and/or equipment provided to facilitate access.

Objective II: Identify Regulatory Barriers (and Incentives) to the Deployment of RF-Enabled Advanced Health Care Technologies and Devices

10. Regarding future trends, just as computing devices keep getting exponentially smaller, large-scale systems like IBM Watson keep getting more powerful. I envision remote services that monitor dozens of data feeds – from sensors, microphones and HD cameras – and not just one. That will have a multiplying effect on bandwidth needs, but as I said before, these apps won’t be created unless an over-capacity of bandwidth is already in place.

12. Regarding issues related to wireless connections in uncontrolled settings, like in homes, cars and hot-spots, security is often discussed, but I’m not concerned with that as long as no financial or compromising data is transmitted (just a patient# and sensor data). More

important, in my view, is lost connections or RF interference that prevents critical alerts from getting through. Even that risk, however, is rather low, because industry keeps improving wireless technology, so I don't see any FCC involvement necessary.

15. Regarding future spectrum and wireless infrastructure needs, there's an increasing need for more capacity as wired connections give way to wireless for the benefits of mobility and anytime/anywhere access. But available FCC spectrum allocation remains limited. Because of the continued evolution of smart radios and antenna systems that can avoid and mitigate interference, I encourage the FCC to rethink the allocation chart, which today allocates big blocks of spectrum to relatively little used applications.

15a. Regarding the timing of new technologies and their widespread adoption, predicting this is always a challenge for market researchers. As technologist and futurist who has both written major market research reports and purchased them, here is my advice for companies evaluating such research. "Market Research can be biased and short-lived, so before you buy any expensive research reports, make sure you get a chance to interview the authors personally so you understand their assumptions, research process, and what shaped their conclusions. Make sure they aren't just extrapolating trends but also include thoughtful discussion of market drivers, inhibitors and enablers, because you'll need that insight to craft your strategies." While people buying research tend to want one set of projections that they can show executive management, I want to see that as a base but with accelerated and inhibited projections as well. (<http://www.mhealthtalk.com/evaluating-market-research/>)

15b. Regarding specific spectrum bands for health care, I reflect on the benefits of unlicensed spectrum and how it has driven significant innovation.

16. Regarding regulatory barriers, many states have laws prohibiting broadband competition from public networks. This is problematic when market conditions don't provide enough incentive for private network operators to deploy BB infrastructure. I'm an advocate of shared access to public infrastructure, including through public/private partnerships, and would like to see more encouragement of that approach.

Objective III: Strengthen the Nation's Telehealth Infrastructure Through the FCC's Rural Health Care Program and Other Initiatives

I have specific expertise or comment.

Objective IV: Raise Consumer Awareness About the Value Proposition of Broadband in the Health Care Sector and its Potential for Addressing Health Care Disparities

24. Regarding consumer awareness and education, here is an example that I noticed when giving a talk a few years ago on The Future of Healthcare. I was speaking at a large Austin assisted living facility to about 40 seniors with average age of about 85 and polled the audience about their awareness. I learned and was disturbed that not one of them owned a PC or smartphone or had ever used the Internet. Yes, that meant they didn't participate in telehealth, but it also meant that they didn't do email, exchange digital photos, or do video calls with grandkids. And they didn't do e-banking, even though their social security checks were electronically deposited. They had to consequently rely on others to give them a ride to the

bank for any transaction. I told that story at the Broadband Communities Conference and was followed by a panelist with a contrasting story that showed just how life-changing a bit of awareness and education can be. He showed a video with testimonials from seniors who had just graduated from an iPad class. Watch the video at the bottom of my home page (www.mhealthtalk.com).

25. Regarding the impact of cost, socioeconomic status, and digital literacy, here's an example of how subscription fees from those with means can subsidize Internet access by those without. In 1997, Mayor Bill White and leaders from Rice University, the Houston Public Library and nonprofit TechnologyForAll (www.techforall.org) established a project to provide free or reduced-rate wireless Internet access in Houston's low-income neighborhoods. Residents with a public library card who attend an orientation class can receive these services with fees subsidized by revenue from other subscribers. They can also receive free computer equipment to access those services. Watch this 3.5 minute TFA Overview video by founder Will Reed at <https://www.youtube.com/watch?v=OxywQnH1UrQ>.

Objective IV: Enable the Development of Broadband-Enabled Health Technologies That are Designed to be Fully Accessible to People With Disabilities

30. Regarding technologies for people with disabilities, I had the pleasure of promoting accessible web design in the [Knowbility](#) booth at South By Southwest, and I gained a new perspective of my own website in the process. Since 1999, Knowbility has worked with hundreds of business, educational entities, government and nonprofit organizations to train staff, implement effective accessibility strategies, and monitor long-term goals to reach millions of disabled new users. (<http://www.mhealthtalk.com/sxsw/>)

Objective VI: Highlight Effective Telehealth Projects, Broadband-Enabled Health Technologies, and mHealth Applications Across the Country and Abroad—To Identify Lessons Learned, Best Practices, and Regulatory Challenges

34. Regarding consumer experiences with broadband-enabled telehealth projects, my wife and I recently moved from Austin to a Dallas area retirement community. We had to find new primary care doctors and specialists and feel lucky to have become part of the Baylor Scott & White program, which is modeled after the ACA's Accountable Care Organization model. All of our doctors are now interconnected with a team approach to care and shared access to medical records. And as health consumers, we have access to a patient portal for all of our test results and care needs. The ACO model not only adds convenience, but we think it also improves overall care quality and contributes to lower costs. It's an example of the best-of-breed incentives found in Obama's ACA.

35. Regarding specific challenges is my concern with the political power of organizations that see telehealth as a threat to their profits, because they have got laws passed to prevent or slow the trend. In my state of Texas, which [ranks dead last in many health care measures](#), the Texas Medical Board voted to limit the practice of telemedicine by "requiring Texas physicians to have an in-person visit with a patient before they can provide healthcare services through telecommunication technologies." Other health concerns with the state of Texas is that it's #1 in the percent of population uninsured and has the most uninsured children. We have the most

toxic chemicals released into water, generate the most hazardous waste, and have the most carbon dioxide. We also have the second highest birth rate but are 4th in the number of kids living in poverty, are #2 in percent of population with food insecurity, and are #4 in percent of population living below poverty. So much for States Rights.

37. Regarding case studies and launched apps/programs, virtual doctor visits via video conference are starting to go mainstream, with some people putting them on par with a regular trip to the doctor's office. Two years ago UnitedHealthcare jumped on the telemedicine bandwagon by [announcing](#) that they'll cover virtual doctor visits through [American Well](#), [Doctor on Demand](#), and [NowClinic](#). (<http://www.mhealthtalk.com/telemedicine-as-good-as-a-doctor-visit/>)

Objective VII: Engage a Diverse Array of Traditional and Non-Traditional Stakeholders To Identify Emerging Issues and Opportunities in the Broadband Health Space

39. Regarding concerns not yet discussed, the disruptive nature of Moore's Law, the blending of science & technology, and broadband connection of digital medical devices in the hands of consumers offers immense potential. But it also a big threat to industry incumbents, so I must mention my top concern: the corrupting influence of big money in politics from the medical industrial complex. In his famous TIME Magazine report (www.mhealthtalk.com/why-high-medical-bills-are-killing-us/), Steven Brill describes this as hospitals, insurers, drug companies, testing companies, and equipment providers. These special interests spend considerably more on political lobbying than the military industrial complex, all to protect their \$3.2 trillion/year revenue stream and the perverse profits they get from illness and injury. If Congress and regulators were able to promote disruptive business models and technologies like telehealth, enact universal healthcare legislation, and focus on health and wellness, we could bring our costs and outcomes in line with other advanced nations. In the process, we'd save over \$1.5 trillion/year, but that would be a huge loss for incumbent healthcare executives and investors.

ABOUT THE AUTHOR

Wayne Caswell has no formal medical training but a rather unique perspective of digital health and broadband technologies, given this relevant background.

- Founding Editor of Modern Health Talk – writes a blog about health policy, futures and technology, and comments regularly on related articles in the mainstream press.
- CAZITech Founder & Principle Consultant, serving the Digital/Connected/Smart Home and broadband industries with services that included strategy & tactical advice, education & workshops, and market & competitive analysis.
- Served on FCC Consumer Advisory Committee until forced to give up that volunteer position to take a new job at Dell, due to potential conflicts of interest.
- 30-year IBM career with hospital accounts before introducing the company to the smart home market.
- Represented IBM, and later Siemens, and served as Communications Chairman of the HomeRF Working Group, an early wireless industry standard that eventually lost its dominant position to Wi-Fi.
- Married to a registered nurse (now retired)